**ITA 3: Problem Solving Methodology and Database software**

**Chapter 2**

**Problem-Solving Methodology:**

This is a structured process to determine a solution to a problem. It involves the following seven steps:

**Analyse the problem:**

1. List what occurs during the analysis stage.

* Problem is investigated and defined
* Required information/output is gathered
* Multiple solutions are thought of, the best one is chosen

1. Briefly, in the example of Ralph’s Roofing, what are Ralph’s problems?

* His main problem is that his computer program that he is using is not up to date and looses his information and payments.
* Job cards are not used affectively and/or returned back to the draw.
* Writing is all messy and unable to read.
* Cards are inaccurate due to jobs being overlooked or incorrectly calculated.
* Customers who owe money are not identified.

**Design the Solution**

1. List what occurs during the design stage.

* Producing a plan that includes hardware and software needed to build the solution.
* How the data will be validated and stored.
* Procedure that should be followed during the process.
* Output requirements are also considered.

**Structure of databases:**

There are two distinct types of databases, Flat File Database and Relational Databases.

Define the following terms:

* 1. Flat file database: - Stores data in tables consisting of rows and columns.
  2. Field: - Contains a specific piece of information.
  3. Record: - Each row in the table holds a record.
  4. Primary key: - Uniquely identifies each record in the database table.
  5. Form or data entry screens: - Allows an input screen to be formatted and linked to an under lying table.
  6. Query: - Filters a set of data.
  7. Report: - Formats the query data and allows you to add summary totals as well as headings to make the information easier to read and understand.
  8. Macros or buttons or use of scripts: - Automates to some extent the procedures in the database.
  9. List the common data types: -
     + Text – Alphanumeric, up to 255 characters
     + Numeric – Numbers only
     + Data – a variation of numeric fields
     + Boolean – Yes/No, True/False
     + Object – images, audio, video or similar
     + Memo – unlimited text, but not searchable.
  10. In file maker pro what are the common data types? Object, Data and Numeric

**Relational databases**

1. Define this type of database: - Companies with heaps of data use these, a relational database stores data relationships between tables. For a relationship to be established between two or more tables they must have a common field/s.
2. One-to-one relationship, give an example: - used where a record in one table is connected to only one record in the second table.
3. One-to-many relationship, give an example: - When the first record in the table can connect to more then one in the second table.
4. Many-to-many relationship, give an example: - When each record in the first table can be connected to a number of records in the second table.

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